

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A communication apparatus ~~having a plurality of communication elements that are electrically connected to an electrically conductive layer or an electromagnetic action transfer layer, characterized in that each of the communication elements has a communications capability of conveying a signal via the conductive layer or the electromagnetic action transfer layer to other neighboring communication elements~~comprising:

a first conductive layer;

a second conductive layer; and

a plurality of communication elements that are connected to the first conductive layer and the second conductive layer, wherein

a first communication element of the plurality of communication elements, initiating transmission to a second communication element of the plurality of communication elements, is operative to control a voltage between the first conductive layer and the second conductive layer, letting the second communication element to acknowledge a change in the voltage propagated around the first communication element as a signal,

wherein the second communication element is operative to monitor the signal from the first communication element and acknowledge the change in the voltage between the first conductive layer and the second conductive layer as the signal,

wherein the second communication element is assigned an ID identifying the element, and the signal includes an ID identifying a recipient communication element of the plurality of communication elements which is subsequently to receive the signal, and

wherein the recipient communication element determines whether a signal is destined to the element by referring to the ID included in the signal.

2. (currently amended): A communication apparatus according to claim 1, where in the first communication element is operative to generate, as the signal, the change in the voltage between the first conductive layer and the second conductive layer propagated concentrically around the first communication element~~having a plurality of distributed communication elements, characterized in that each of the communication elements has such a coverage that allows local communications with other neighboring communication elements, the local communications allowing sequential transmissions of a signal between the communication elements to convey the signal to a target communication element.~~

3. (currently amended): The communication apparatus according to claim 1, wherein the transmitted signal includes an ID identifying a communication element which is a final destination of the signal

~~no individual conductive wires are formed between the communication elements.~~

4. (currently amended): The communication apparatus according to claim ~~2~~1, wherein the transmitted signal includes an ID identifying a communication element which is an originating source of transmission of the signal

~~no individual conductive wires are formed between the communication elements.~~

5. (currently amended): The communication apparatus according to claim 1, having a plurality of distributed communication elements, wherein each of the communication elements

has such a coverage that allows local communication with other neighboring communication elements, the local communication allowing sequential transmissions of a signal between the communication elements to convey the signal to a target communication element~~wherein~~

~~the plurality of communication elements are classified into the first to Nth order ranks in ascending order of communication management capabilities of the elements.~~

6. (currently amended): The communication apparatus according to claim 21, wherein the first conductive layer and the second conductive layer are flat layers

~~the plurality of communication elements are classified into the first to Nth order ranks in ascending order of communication management capabilities of the elements.~~

7. (currently amended): The communication apparatus according to claim 51, wherein the first conductive layer and the second conductive layer are uniform conductive layers

~~the communication elements of each rank function as the first order communication element for conveying a signal to other communication elements that exist within a certain neighboring range therefrom, to realize local communications with the neighboring communication elements.~~

8. (currently amended): The communication apparatus according to claim 61, wherein

the plurality of communication elements are classified into the first order to the Nth order ranks in ascending order of the communication management capabilities of the element~~communication elements of each rank function as the first order communication element for conveying a signal to other communication elements that exist within a certain neighboring range therefrom, to realize local communications with the neighboring communication elements.~~

9. (currently amended): The communication apparatus according to claim 7~~1~~,
~~wherein~~

~~the Mth order communication elements have at least a function of the (M-1)th order
communication elements, which is necessary for communication management, and~~

~~the Mth order communication elements can be less densely populated than the (M-1)th
order communication elements~~further comprising a sensor element including a circuit for
measuring stress or temperature.

10. (currently amended): The communication apparatus comprising:
a first conductive layer;
a second conductive layer; and
a plurality of communication elements that are connected to the first conductive layer and
the second conductive layer, wherein

a first communication element of the plurality of communication elements, initiating
transmission to a second communication element of the plurality of communication elements, is
operative to control a voltage between the first conductive layer and the second conductive layer,
letting the second communication element to acknowledge a change in the voltage, propagated
around the first communication element, as a signal,

wherein the second communication element is operative to monitor the signal from the
first communication element and acknowledge the change in the voltage between the first
conductive layer and the second conductive layer as the signal,

wherein the first communication element is assigned an ID identifying the element, and
the transmitted signal includes an ID identifying the communication element which transmitted
the signal, and

wherein the second communication element identifies the communication element which transmitted the signal by referring to the ID included in the signal~~according to claim 8, wherein the Mth order communication elements have at least a function of the (M-1)th order communication elements, which is necessary for communication management, and the Mth order communication elements can be less densely populated than the (M-1)th order communication elements.~~

11. (currently amended): ~~A communication device for transmitting a signal to other communication elements existing within a coverage, the device comprising first and second signal layers isolated from each other, and a communication element connected electrically to these layers, wherein the coverage is determined in accordance with the resistances of the first and second signal layers and the capacitance between the first and second signal layers, allowing the communication element to transmit a signal by discharging electric charges to the first and/or second signal layer~~The communication apparatus according to claim 10, wherein the first communication element is operative to generate as the signal, the change in the voltage between the first conductive layer and the second conductive layer propagated concentrically around the element.

12. (currently amended): ~~A communication device for transmitting a signal to other communication elements existing within a coverage, the device comprising first and second signal layers, and a communication element connected electrically to these layers, wherein the first signal layer and the second signal layer are brought into conduction in the communication element, thereby allowing a signal to be transmitted~~The communication apparatus according to claim 10, wherein the transmitted signal includes an ID identifying a communication element which is a final destination of the signal.

13. (currently amended): The communication device ~~according to claim 11, further comprising a high resistance layer which has a resistance higher than those of the first and second signal layers and which brings these layers into conduction~~apparatus according to claim 10, wherein the transmitted signal includes an ID identifying a communication element which is an originating source of transmission of the signal.

14. (currently amended): The communication device ~~according to claim 12, further comprising a high resistance layer which has a resistance higher than those of the first and second signal layers and which brings these layers into conduction~~apparatus according to claim 10 having a plurality of distributed communication elements, wherein each of the communication elements has such a coverage that allows local communications with other neighboring communication elements, the local communications allowing sequential transmissions of a signal between the communication elements to convey the signal to a target communication element.

15. (currently amended): The communication device ~~according to claim 11, further comprising a high resistance layer which has a resistance higher than that of the first signal layer and which is electrically connected to the first signal layer, and a power supply layer which is electrically connected to the high resistance layer and which supplies power to the communication element~~apparatus according to claim 10, wherein the first conductive layer and the second conductive layer are flat layers.

16. (currently amended): The communication device ~~according to claim 12, further comprising a high resistance layer which has a resistance higher than that of the first signal layer and which is electrically connected to the first signal layer, and a power supply layer which is electrically connected to the high resistance layer and which supplies power to the~~

communication element apparatus according to claim 10, wherein the first conductive layer and the second conductive layer are uniform conductive layers.

17. (currently amended): ~~The communication device according to claim 16, wherein the coverage is determined in accordance with the resistance of the first signal~~
layer apparatus according to claim 10, wherein the plurality of communication elements are classified into the first order to the Nth order ranks in ascending order of communication management capabilities of the elements.

18. (currently amended): ~~A method for circuit board implementation including film-type or sheet-type circuit board, comprising distributing a plurality of circuit elements on an electrically conductive circuit board, the circuit elements each of which has a communications capability of conveying a signal within each predetermined coverage, thereby mounting the circuit elements on the board without forming individual conductive wires between the circuit elements~~
The communication apparatus according to claim 10, further comprising a sensor element including a circuit for measuring stress or temperature.

19. - 44. (canceled)